AMENDMENT TO THE CLAIMS

Please amend the claims as follows:

1. – 19. (Canceled)

20. (New) A method for forming a semiconductor device, comprising the steps of:

a) forming an insulating film of a carbon-containing silicon oxide film over a substrate;

b) etching the insulating film using a resist pattern as a mask, thereby forming an interconnect groove in the insulating film;

c) performing an etching process, thereby removing a surface film of the resist pattern and forming a silicon oxide layer on an inner face of the interconnect groove ,

d) removing the resist pattern; and

e) filling the interconnect groove with a metal film to form a metal interconnect.

21. (New) The method of Claim 20, wherein the performing an etching process, thereby removing the surface film of the resist pattern and forming a silicon oxide layer on the inner face of the interconnect groove at the same time.

22. (New) The method of Claim 20, wherein the etching process uses an etching gas containing oxygen.

23. (New) The method of Claim 20, wherein the etching process is formed within plasma ambient at a pressure of 13.3 Pa or more.

24. (New) The method of Claim 20, wherein the etching process is an anisotropic RIE process.

25. (New) The method of Claim 20, further comprising the steps of removing the silicon oxide layer, existing on the inner face of the interconnect groove, after removing the resist pattern and before filling the interconnect groove with the metal film.

26. (New) The method of Claim 20, wherein the silicon oxide layer has a thickness of 20 nm or less.

27. (New) The method of Claim 20, wherein the silicon oxide layer has a density of 2.0 g/cm^3 or more.

28. (New) The method of Claim 20, wherein the metal interconnect is made up of a barrier metal layer and a main interconnect layer.

29. (New) A method for forming a semiconductor device, comprising the steps of:

a) forming an insulating film of a carbon-containing silicon oxide film over a substrate;

b) etching the insulating film using a resist pattern as a mask, thereby forming an interconnect groove in the insulating film;

c) filling the interconnect groove with a resist film;

d) performing an etching process, thereby removing a first region of the resist film, existing outside the interconnect groove, and the resist pattern,

e) removing a second region of the resist film, still existing inside the interconnect groove,

f) depositing a metal film on the interconnect groove,

g) filling the interconnect grove with the metal, followed by removing metal film outside the interconnect and a surface film of the insulating film.

30. (New) The method of Claim 29, further comprising a step of forming the surface film on the insulating film when the second region of the resist film inside the interconnect groove is removed.

31. (New) The method of Claim 29, wherein the etching process uses an etching gas containing oxygen.

32. (New) The method of Claim 29, wherein the etching process is carried out by a down flow technique in a vacuum of 13.3 Pa or less.

33. (New) The method of Claim 29, wherein the metal film is made up of a barrier metal layer and a main interconnect layer.

34. (New) The method of Claim 33, wherein the barrier metal is a tantalum nitride and the main interconnect layer is copper.

35. (New) A method for forming a semiconductor device, comprising the steps of:

a) forming an insulating film of a carbon-containing silicon oxide film over a substrate;

b) etching the insulating film using a resist pattern as a mask, thereby forming an interconnect groove in the insulating film;

c) filling the interconnect groove with a resist film;

d) performing a etching process, thereby removing a first region of the resist film existing outside the interconnect groove and a resist pattern,

e) removing a second region of the resist film existing inside the interconnect groove,

f) forming a silicon oxide layer on an inner face of the interconnect groove,

g) depositing a metal film on the interconnect groove,

h) filling the interconnect grove with the metal, followed by removing the metal film outside the interconnect and a surface film on the insulating film.

36. (New) The method of Claim 35, wherein the etching process uses an etching gas containing oxygen.

37. (New) The method of Claim 35, wherein the etching process is carried out by a down flow technique in a vacuum of 13.3 Pa or less.

38. (New) The method of Claim 35, wherein the surface film comprises a silicon oxide layer on the bottom and side faces of the interconnect groove formed by an anisotropic RIE process in a vacuum of 13.3 Pa or less.

39. (New) The method of Claim 35, wherein the silicon oxide layer has a thickness of substantially 15 nm or less.

40. (New) The method of Claim 35, wherein the silicon oxide layer has a density of 2.0 g/cm^3 or more.